

METAL AXES OF THE KOZARAC-STUBLO TYPE FROM CARPATHIAN-VOLHYNIA METALLURGY CENTER OF ‘WILLOW LEAF’ OF UKRAINIAN CORDED WARE CULTURE CIRCLE AND ITS CONNECTIONS TO DANUBIAN REGION

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This contribution addresses some questions or ideas concerning metal axes of the Kozarac-Stublo type from Carpathian-Volhynia metallurgy centre of ‘willow leaf’ of Ukrainian Corded Ware Complex and its connections to Danubian region. The article is dedicated to the genesis and construction of type chronology of Corded Ware culture metal axes using archaeological complexes and artifacts available for the author.

Keywords: Ukraine, Bronze Age, Corded Ware culture, metal axes, Carpathian-Volhynia metallurgy center of ‘willow leaf’, Kozarac-Stublo.

The large amount of new finds accumulated during the last years¹ has allowed rethinking my ideas about metal axes of Kozarac-Stublo type from Carpathian-Volhynia metallurgy center of ‘willow leaf’ of Ukrainian Corded Ware culture (Klochko/Klochko 2013). Following text is further development of Jozef Bátora’s conception (Bátora 2006, 34–47) and suggests the new theory of their origin and type chronology.

Among the new findings from Dniester region, there are axes which can be formally considered to be of Kozarac-Stublo type. I call them ‘Vanchikivtsi’ variant. Unlike ‘classical’ Kozarac-Stublo type axes, which usually are made in reusable ‘closed’ casting moulds, such axes were made in one-time casting moulds by lost-wax casting technique.

To this variant belong findings from Vanchikivtsi village in Novoselytsia Raion, Chernivtsi Oblast (Kyiv, collection of A. V. Kozymenko, new additions; analysis 1640), Chortkiv Raion in Ternopil Oblast (Klochko/Kozymenko 2017, fig. 2: 3: 5; analysis 690), Vynnyky in Lviv Oblast (Violity, online 29. 01. 2016), Kamianets-Podilskyi in Khmelnytskyi Oblast (Kyiv, collection of A. V. Kozymenko, new additions; analysis 1809), Ternopil Oblast (Violity, online 09. 08. 2016 and 03. 11. 2016), city of Khmelnytskyi (Violity, online 29. 06. 2018 and 06. 03. 2019), Zvyniach village in Chortkiv Raion, Ternopil Oblast (Kyiv, collection of A. V. Kozymenko, new additions; analysis 2006). As a ‘woodcutter’ I also assign to the ‘Vanchikivtsi’ variant the axe from Horokhiv Raion in Volyn Oblast (Fig. 1: 1–10; Markus/Okhrimenko 2010, fig. 4: 23: 3). As it was said, unlike ‘classical’

Kozarac-Stublo type axes, which were made in ‘closed’ casting moulds (judging by the traces of casting stitches on axe sides) ‘Vanchikivtsi’ variant axes have amorphous forms and do not have casting stitches which indicates the lost-wax casting technique (Fig. 1: 15, 16). Such technique in the region was known during the previous eneolithic period, in Cucuteni-Trypillia culture (Mareş 2012; Klochko/Kozymenko 2017, 285–293).

The prototypes for such axes presumably were axe-hacks of Cucuteni-Trypillia culture and other artefacts of the late Trypillia time. Best examples are represented by the axe-hack from Letychiv hoard (Klochko/Kozymenko 2017, 288–290, fig. 5), axe-hack of ‘Yasladan-Tyrgu Okna’ type from Ivanintsy village in Letychiv Raion, Khmelnytskyi Oblast (Klochko/Kozymenko 2017, fig. 1: 2: 11; analysis 1655) and axes from Kamianets-Podilskyi in Khmelnytskyi Oblast (Kyiv, collection of A. V. Kozymenko, new additions; analysis 1810) and from ‘Podnistrovyia’ (Klochko/Kozymenko 2017, fig. 1: 2: 19; analysis 111; for all above mentioned axe-hacks see Fig. 1: 11–14). ‘Vanchikivtsi’ variant axes are concentrated on middle Dniester – the region with ancient metallurgy traditions of Cucuteni-Trypillia culture, based on copper ores of Transylvania-Prut ore basin (Fig. 2).

Two out of three spectrally analysed axes of ‘Vanchikivtsi’ variant – axes from Vanchikivtsi village (analysis 1640) and Chortkiv Raion in Ternopil Oblast (Klochko/Kozymenko 2017, fig. 2: 3: 5; analysis 690) are made of arsenical bronze (see Table 1 – results of the spectral analyses).² Arsenical bronze was widespread in Dniester region during the late Trypillia times, at

¹ The author is grateful to A. V. Kozymenko for the opportunity to use materials and spectral analyzes of finds from his collection.

² Spectral analyzes were conducted by T. Y. Goshko.



Fig. 1. 'Vanchikivtsi' variant of Kozarac-Stublo type axes. 1 – Vanchikivtsi; 2 – Chortkiv Raion; 3 – Vynnyky; 4 – Kamianets-Podilskyi Raion; 5, 6 – Ternopil Oblast; 7, 8 – Khmelnytskyi; 9 – Zvyniach; 10 – Horokhiv Raion. 'Trypillia prototypes' of 'Vanchikivtsi' variant. 11 – Letychiv hoard; 12 – Ivanintsy; 13 – Kamianets-Podilskyi; 14 – Podnistrovyia; 15 – Chortkiv Raion; 16 – Mohyliv-Podilskyi Raion.

Table 1. Spectral analysis of some axes presented in this paper.

Number	1640	690	1809	2006	1665	1810	111	1711	1695	1696	17239	595	1822	112	117
Figure	1/1	1/2	1/4	1/9	1/12	1/13	1/14	1/16, 3/2	2/2	2/3	2/4	2/9	2/10	2/14	7/21
Ag	0.034	0.037	0.037	0.072	0.973	0.023	0.065	–	0.054	0.032	0.39	0.025	0.049	0.028	0.046
Al	–	–	–	–	–	–	–	–	–	0.646	0.05	0.4	–	–	–
As	1.053	0.255	0.188	0.442	1.225	0.896	0.395	3.513	0.349	2.134	0.45	–	0.406	0.436	2.415
Bi	–	–	–	0.078	–	–	–	–	–	сл	–	–	–	–	0.007
Ca	0.013	–	0.033	0.022	–	0.2	0.013	–	0.106	0.255	–	0.028	0.037	–	–
Cl	–	0.072	–	–	0.829	–	0.102	0.374	0.453	0.424	–	0.185	–	0.038	0.089
Co	–	0.016	>0.086	0.077	–	–	–	trace	–	–	–	0.017	>0.084	0.008	0.008
Cr	–	–	–	–	–	–	–	–	–	–	0.06	–	–	–	–
Cu	98.86	99.265	99.46	97.99	96.86	98.7	98.44	95.97	99.01	96.44	98.20	95.5	99.08	99.08	96.26
Fe	–	–	0.026	0.024	–	>0.096	0.124	–	–	–	0.09	0.039	–	–	0.48
Na	–	–	–	–	–	–	–	–	–	–	–	0.049	–	–	–
Ni	–	0.08	–	–	–	–	0.034	–	–	–	–	0.077	–	0.05	0.035
P	–	–	–	–	0.097	–	–	0.119	–	–	–	0.109	0.114	–	–
Pb	0.078	0.014	0.066	1.189	–	–	0.03	–	–	–	0.67	0.006	0.136	0.117	0.075
S	0.039	–	0.071	0.064	0.015	0.045	–	0.021	0.031	0.07	–	0.228	0.041	0.089	0.475
Sb	–	–	0.031	–	–	0.04	0.059	–	–	–	–	–	0.041	–	0.111
Si	–	–	–	–	–	–	0.73	–	–	–	–	3.253	–	0.104	–
Sn	–	0.024	–	0.039	–	–	–	–	–	–	–	–	>0.008	–	–

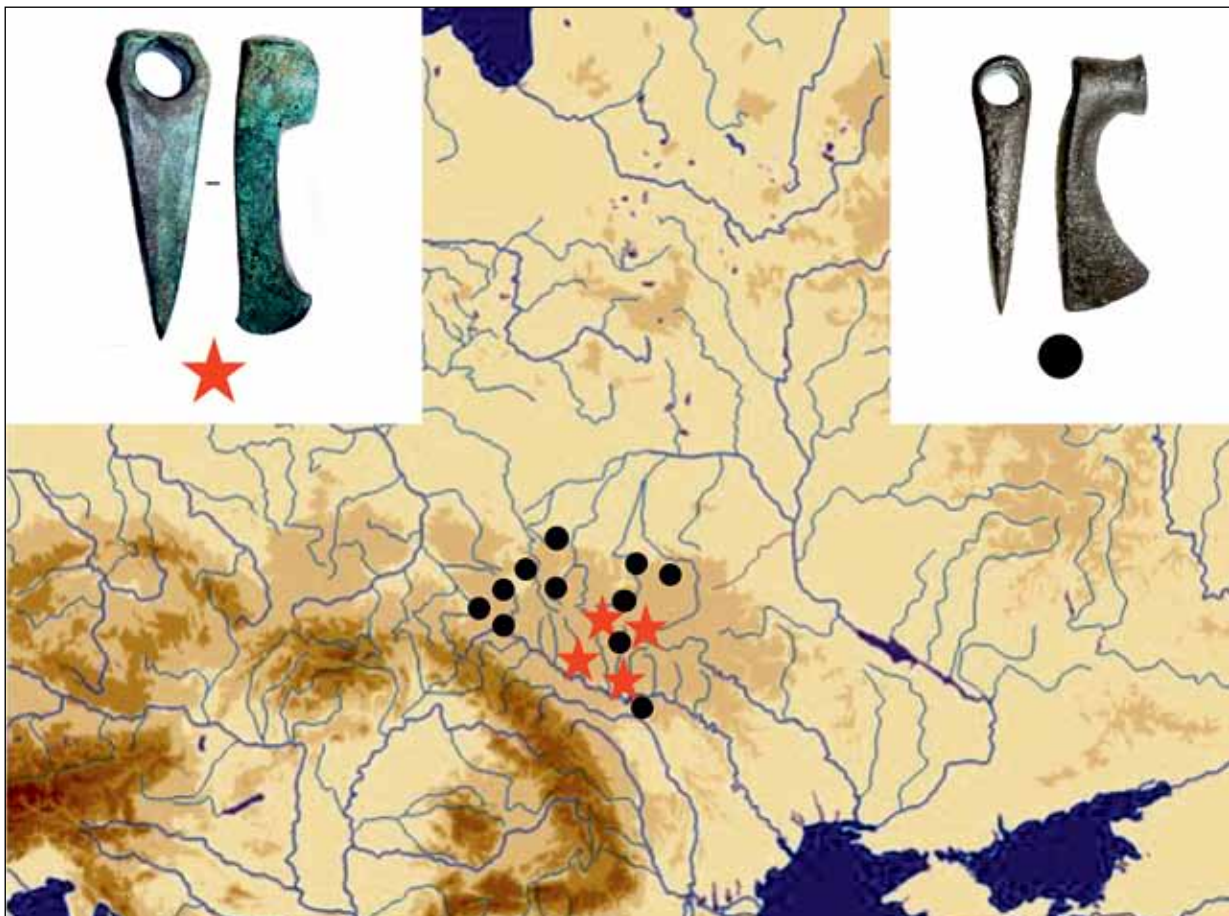


Fig. 2. The map of 'Vanchikivtsi' variant axes and their Trypillia prototypes.



Fig. 3. Lelişeni-Szczytna variant axes. 1 – Lelişeni; 2 – Mushkatiwka; 3 – Old Crimea; 4 – Szczytna; 5 – Cherkasy Oblast; 6 – Vinnytsia; 7 – Tulchyn; 8 – collection of A. V. Kozymenko; 9 – Cherkasy Oblast; 10 – Haisyn Raion; 11 – Ternopil Oblast; 12 – Khmelnytskyi Oblast; 13 – Vinnytsia; 14 – Volhynia Oblast.

the Trypillia CII phase (Klochko 2017a; 2017b; Klochko/Klochko 2013; Klochko/Kozymenko 2017).

It is peculiar that while the most of the 'Trypillia prototypes' are made of 'pure' copper, the axe-hack of 'Yaslada'n-Tyrgu Okna' type from Ivanintsy village in Letychiv Raion, Khmelnytskyi Oblast (analysis 1655) and axe from Kamianets-Podilskyi in Khmelnytskyi Oblast (analysis 1810) are made of arsenical bronze (Table 1), which indicates the rather early appearance of such bronzes at Prykarpattia, probably at the end of Trypillia CI phase. However, they are probably the natural alloys. Some 'classical' Kozarac-Stublo type axes are made of arsenical bronze as well, for example the axe from Mohyliv-Podilskyi Raion in Vinnytsia Oblast (Fig. 1: 16; 2; analysis 1711; Kyiv, collection of A. V. Kozymenko, new additions).

Therefore, axes of 'Vanchikivtsi' variant can be considered as the early form of Kozarac-Stublo type axes, which date to the end of 4th-beginning of 3rd millennium BC as a part of foundation of Carpathian-Volhynia metallurgy center of 'willow leaf' (Klochko/Klochko 2013).

The establishment of reusable casting moulds and the 'classical' axes of Kozarac-Stublo type occurred in different ways. One of them – *the casting technique in partly 'closed' form with open back* – is presented by Lelişeni-Szczytna variant. Stone casting mould for such axes was found at Lelişeni settlement in Romania (Fig. 3: 1; Roman/Dodd-Opritesku/Janos 1992). Such axes were found in Mushkatiwka in Borshchiv Raion, Ternopil Oblast (analysis 1695; Kyiv, collection of A. V. Kozymenko, new additions) and near the town of Old Crimea in Kirov Raion in Crimea (Fig. 3: 2, 3; analysis 1696; Klochko/Kozymenko 2017, fig. 2: 5: 2) and in Corded Ware culture grave 4/6 near Szczytna in Jarosław County in Poland, which dates back to 2670–2470 BC (Fig. 3: 4; Hozer/Machnik/Bajda-Wesołowska 2017, 115, fig. 48: 1). The further development of such technology was *the casting technique in partly open back* (through the hole on the back side). Such axes are found in Cherkasy Oblast (Violity, online 14. 19. 2019), near the city of Vinnytsia (Violity, online 19. 11. 2018), in Tulchyn, Vinnytsia Oblast (Fig. 3: 5–7; Violity, online 08. 02. 2019), from collection of A. V. Kozymenko (Klochko/Kozymenko 2017, fig. 2: 3: 2), Cherkasy Oblast (Fig. 3: 8, 9; Klochko/Kozymenko 2017, fig. 2: 3: 1; analysis 595), Haisyn Raion in Vinnytsia Oblast (Klochko/Kozymenko 2017, fig. 2: 3: 4; analysis 1822), Ternopil Oblast (Violity, online 26. 6. 2018) and Khmelnytskyi Oblast (Fig. 3: 10–12; Violity, online 14. 06. 2018). The date from Szczytna grave allows attributing such axes to the first half of 3rd millennium BC.

The axe from the Old Crimea is made of arsenical bronze (Table 1).

The axes from Vinnytsia (Violity, online 01. 03. 2016) and Volhynia Oblast (Fig. 3: 13, 14; Klochko/Kozymenko 2017, fig. 2: 3: 3; analysis 112) are made with 'open belly' casting technique, which is common for the axes of Samara and Banyabyk types from the early phase of Yamna culture (the first half of 3rd millennium BC) of Middle Naddnipyrianshchyna (Klochko 2019) and most likely are they markers of Corded Ware cultures of Podilia and Volhynia and Yamna culture of Dnipro region, too.

'Classical' axes of Kozarac-Stublo type are found in Vinnytsia Oblast (Fig. 4: 1; Violity, online 15. 01. 2016), Mohyliv-Podilskyi Raion in Vinnytsia Oblast (Fig. 4: 2; Kyiv, collection of A. V. Kozymenko, new additions; analysis 1711), near Lviv (Fig. 4: 3; Violity, online 28. 04. 2016), near Chernivtsi (Fig. 4: 4; Violity, online 28. 06. 2018), in Rivne Oblast (Fig. 4: 5; Violity, online 24. 12. 2016), near Odessa (Fig. 4: 6; Violity, online 18. 03. 2017), near Vinnytsia (Fig. 4: 8; Violity, online 24. 08. 2017), near Cherkasy (Fig. 4: 9; Violity, online 06. 08. 2018), near Kaniv in Kyiv Oblast (Fig. 4: 10, 11; Klochko 2001, fig. 57: 4; Klochko 2006, fig. 54: 3, 4), in the hoard from Mezhygirszi village in Halych Raion, Ivano-Frankivsk Oblast (Fig. 4: 12; Klochko 2001, fig. 53: 10; Klochko 2006, fig. 50: 10), in 'Kyrylivsky Vysoty' hoard in Kyiv (Fig. 4: 13; Klochko 2006, photo 8), in Skakun hoard from Kharkiv Oblast (Fig. 4: 14; Gimbutas 1965), in Kolontaiv hoard found near Kolontaiv village in Krasnokutsk Raion, Kharkiv Oblast (Fig. 6: 5; Korenevskii 1976), in Komariv (Fig. 4: 15; Klochko 2001, fig. 53: 11; Klochko 2006, fig. 50: 11), near urban-like settlement Malynivka in Rozhyshche Raion, Volyn Oblast (Fig. 4: 16; Markus/Okhrimenko 2010, fig. 4: 23: 2), near Khmelnytskyi (Fig. 4: 17; Violity, online 16. 01. 2013), in Styblo hoard in Steblivka village in Zdolbuniv Raion, Rivne Oblast (Fig. 4: 18; Klochko 2001, fig. 53, 9; Klochko 2006, fig. 50: 11), near Vinnytsia (Fig. 4: 19; Violity, online 14. 06. 2018), Khmelnytskyi Oblast (Fig. 4: 20; Violity, online 05. 02. 2019), Vinnytsia Oblast (Fig. 4: 21, 22; Violity, online 21. 07. 2019 and 05. 11. 2019), Shargorod in Vinnytsia Oblast (Fig. 4: 23; Violity, online 23. 06. 2019), Ternopil Oblast (Fig. 4: 24; Violity, online 17. 05. 2019), Ivano-Frankivsk (Fig. 4: 25; Violity, online 09. 10. 2019), Lviv (Fig. 4: 26; Violity, online 10. 03. 2016), collection of A. V. Kozymenko (Fig. 4: 27; Klochko/Kozymenko 2017, fig. 2: 3: 6; analysis 117), small silver axe from Vinnytsia (Fig. 2: 4: 28; collection of Y. Dobrovanov).

The results of several conducted spectral analyzes show the preference of arsenical bronze (Table 1) used for casting of 'classical' Kozarac-Stublo type axes.

All these axes were casted in 'closed' two-folded casting forms which were common for Kolontaiv-Korbaska type axes of Catacomb culture and



Fig. 4. Kozarac-Stublo type axes. 1 – Vinnytsia Oblast; 2 – Mohyliv-Podilskyi Raion; 3 – Lviv; 4 – Chernivtsi; 5 – Rivne Oblast; 6 – Odessa; 7 – Khmelnytskyi Oblast; 8 – Vinnytsia; 9 – Cherkasy; 10, 11 – Kyiv Oblast, Kaniv region; 12 – hoard from Mezhygirszi village; 13 – Kyrylivskyi vysoty hoard; 14 – Skakun hoard; 15 – Komariv; 16 – Malynivka; 17 – Khmelnytskyi; 18 – Stublo hoard; 19 – Vinnytsia; 20 – Khmelnytskyi Oblast; 21, 22 – Vinnytsia; 23 – Shargorod, Vinnytsia Oblast; 24 – Ternopil Oblast; 25 – Ivano-Frankivsk; 26 – Lviv; 27 – Collection of A. V. Kozymenko; 28 – Vinnytsia (collection of Y. Dobrovanov); 29 – Poltava Oblast; 30 – Sumy Oblast.

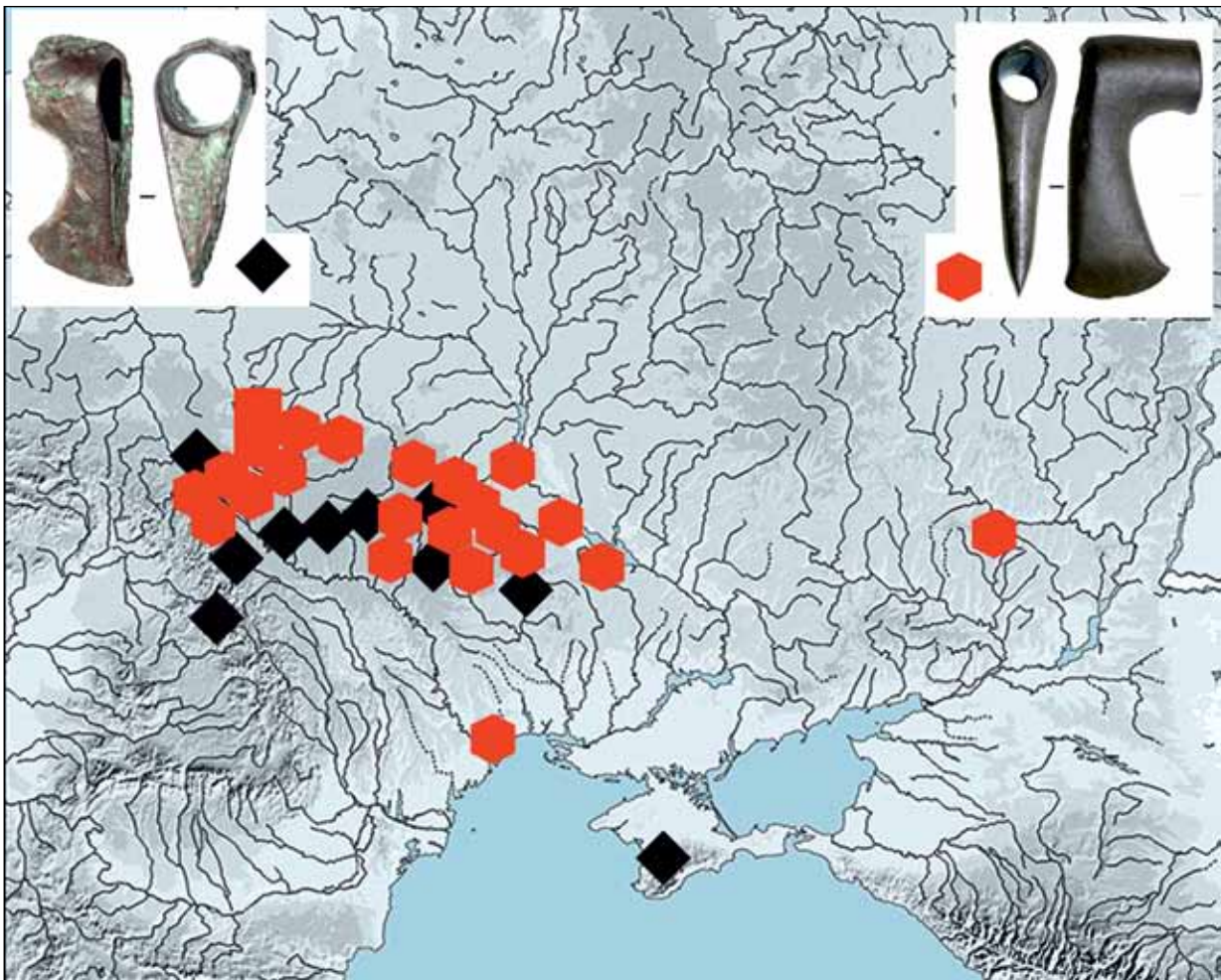


Fig. 5. The map of Kozarac-Stublo type axes.

Khrystynivka type axes of the late phase of Yamna culture in the Right-bank Ukraine (Klochko *et al.* 2020), which indicates the long-time contacts and technology exchange between Corded Ware cultures, Yamna culture and Catacomb culture in the Right-bank Ukraine.

The findings of 'classical' Kozarac-Stublo type axes (moulded in two-folded casting moulds) occur almost in the whole forest-steppe region of Eastern Ukraine, where they are found alongside with Kolontaiv type axes of Catacomb culture, which indicate the infiltration of Corded Ware culture people to the east, up to Don River. In the Right-bank Ukraine at the end of 3rd millennium BC new variants of Kozarac-Stublo type axes had been formed, having wider poll. The hole in the poll becomes oval. The examples of such axes come from Poltava Oblast (Violity, online 02. 04. 2018) and Sumy Oblast (Fig. 4: 29, 30; Violity, online 05. 10. 2018).

The findings of Kozarac-Stublo type axes in hoards Kyrylivsky vysoty in Kyiv (Klochko 2006,

photo 8), Skakun and Kolontaiv in Kharkiv Oblast (Gimbutas 1965; Korenevskii 1976) alongside Kolontaiv type axes of Catacomb culture (Fig. 6: 3–5) allow to date them, based on dates of classical phase of Catacomb culture in the Eastern Ukraine, between 2800–2500 cal. BC (Bratchenko 2003, 207; Klochko/Klochko 2013, 64, 65, fig. 17: 1–3, Eastern Ukraine; Telegin/Pustovalov/Kovalyukh 2003, 183). Almost at the exact time J. Bátorá used to date Kozarac type axes in Central Europe between 2800–2500 cal. BC (Bátorá 2006, 31–39). At the settlement of Zók-Várhegy culture near Danube in Baranya country, Hungary, which dates back to 2875–2501 cal. BC (Bátorá 2006, 37), the casting forms of both Kozarac-Stublo type axes and Kolontaiv-Korbaska type axes were found (Fig. 6: 1, 2). This indicates that Danubian region had the same contacts between Corded Ware culture and Catacomb culture as the Eastern Ukraine.

The appearance of Kozarac-Stublo type axes in Central Europe is probably the result of the migra-

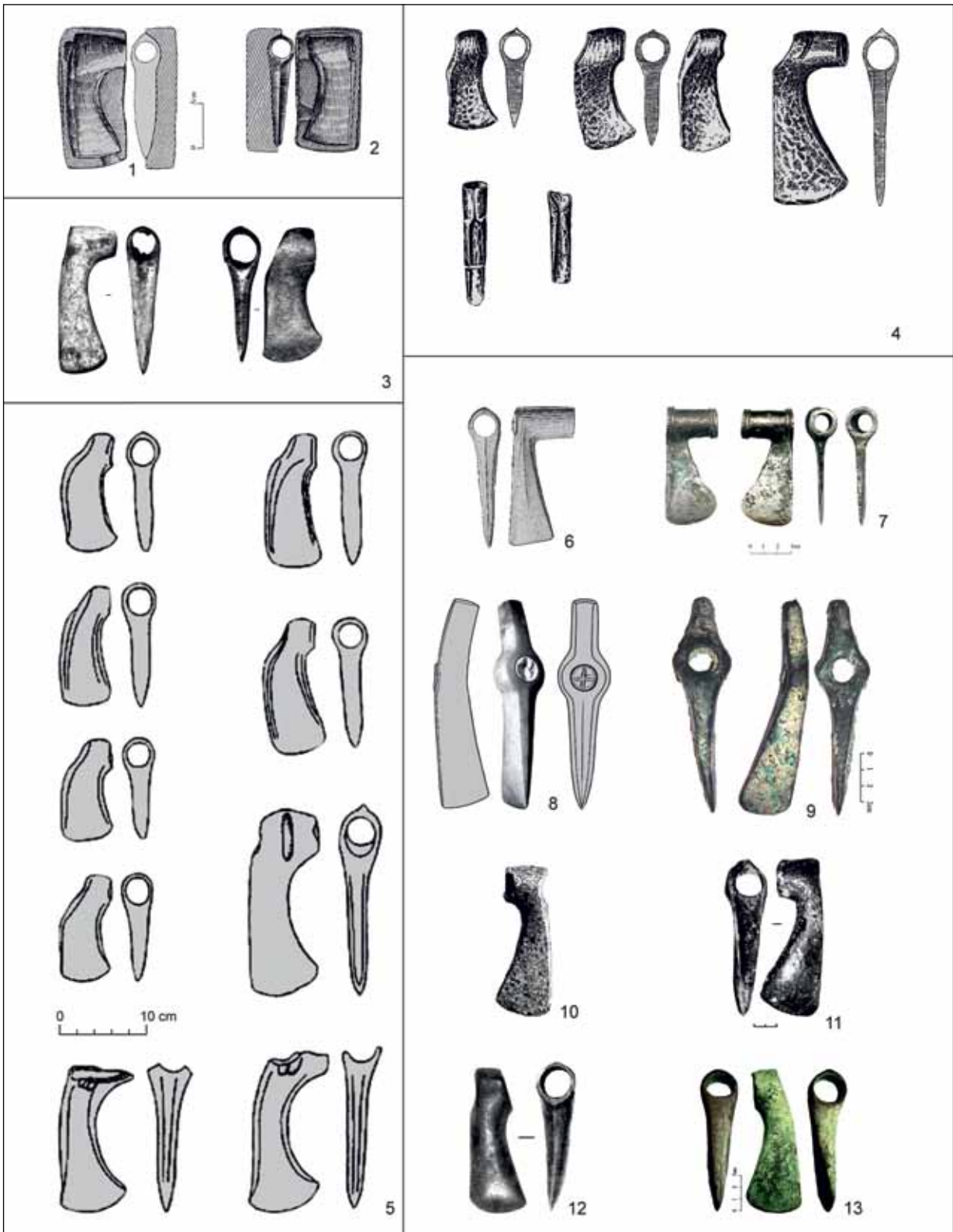


Fig. 6. The comparison of Kozarac-Stublo type axes from Central Europe and the Ukraine. 1 – Zók-Várhegy (casting form of Kozarac-Stublo axe); 2 – Zók-Várhegy (casting form of Kolontaiv-Korbaska axe); 3 – Kyrlyivsky vysoty hoard; 4 – Skakun hoard, Kharkiv Oblast; 5 – Kolontaiv hoard; 6 – Mala Gruda; 7 – Vinnytsia Oblast; 8 – Gruda Bolevicha; 9 – Late-Trypillia copper axe from Vinnytsia Oblast. 10 – Kozarac hoard; 11 – Malynivka; 12 – Balkány-Abapuszta; 13 – Khmelnyskyi.

tion of Corded Ware culture people from Prykarpattia and Volhynia. They reached Montenegro, bringing there elite kurgan burial ritual and some cultural elements like battle and status axes.

There are many examples of analogies for axes between Ukraine and Central Europe, so I will bring only few of them. The stone hammer-axe from Gruda Bolevicha in Montenegro (*Bakovich/Hovedaritsa 2010*, fig. 6) imitates the late-Trypillia copper hammer-axe from Vinnytsia Oblast (Fig. 6: 8, 9; Vinnytsia, collection of Y. Dobrovanov). The small silver axe from Gruda Mala in Montenegro (*Hansen 2009*, fig. 8) is similar to the small silver axe with corded ornament (casted after wax model) from Vinnytsia (Fig. 6: 6, 7; Vinnytsia, collection of Y. Dobrovanov). Blagoe Govedarycza dates Gruda Bolevicha and Gruda Mala to the first half of 3rd millennium BC, more precisely to 2700 cal. BC (*Bakovich/Hovedaritsa 2010*, 277) – the same time as was suggested by J. Bátorá.

The axes from eponymous hoard in Kozarac, Montenegro (*Hansen 2009*, Abb. 9), are similar to the axe found near Malynivka village in Rozhyshche Raion, Volyn Oblast (Fig. 6: 10, 11; *Markus/Okhrimenko 2010*, fig. 4: 23: 2). The axe found near Khmelnytskyi (*Violity*, online 16. 01. 2013) is similar to the ‘Balkány-Abapú’szta’ axe (Fig. 6: 12, 13; *Dani*

2013, fig. 7: 1). These axes should be considered as one of the latest variants of Kolontaiiv-Korbaska type of Catacomb culture, synchronous to the late variants of Kozarac-Stublo type.

To sum up, I suggest the new hypothesis: the evolution of Kozarac-Stublo type of axes began on the Middle Dniester at late Trypillia times, later were these axes brought to the Central Europe by the people of Corded Ware culture, and the further development of these axes was parallel to that in the Right-bank Ukraine.

This contribution targets questions and ideas about metal axes of the Kozarac-Stublo type from Carpathian-Volhynia metallurgy center of ‘willow leaf’ of Ukrainian Corded Ware Complex and its connections to Danubian region.

The evolution of axes of Kozarac-Stublo type and the advance of Corded Ware culture people to the east of Ukraine resulted in fact, that they took part in forming of new types of axes in late-Catacomb culture, Babino culture, Abashiv culture, and later – Seimy-Turbino, Zrybna and Androniv culture. However, this topic needs further research.

Metal axes Kozarac-Stublo of Corded Ware cultures, as well as axes of Banyabyk Yamna culture (*Klochko 2019*) are the markers of indoeuropean migration in Central and Eastern Europe.

LITERATURE

- Bakovich/Hovedaritsa 2010* – M. Bakovich/B. Hovedaritsa: Nakhodki iz ‘kniazheskoho’ kurgana Hruđa Bol’evicha v Podgoritse, Chernogoria. *Stratum plus* 2, 2010, 269–279.
- Bátorá 2006* – J. Bátorá: *Štúdie ku komunikácii medzi strednou a východnou Európou v dobe bronzovej*. Bratislava 2006.
- Bratchenko 2003* – S. N. Bratchenko: Radiocarbon chronology of the Early Bronze Age of the Middle Don. Svato, Luhansk region. In: A. Koško/V. Klochko (eds.): *The foundation of radiocarbon chronology of cultures between the Vistula and Dnieper: 4000–1000 BC*. Baltic-Pontic Studies 12. Poznań 2003, 185–208.
- Dani 2013* – J. Dani: The Significance of Metallurgy at the Beginning of the Third Millennium BC in the Carpathian Basin. In: V. Heyd/G. Kulcsár/V. Szeverényi (eds.): *Transitions to the Bronze Age. Interregional Interaction and Socio-Cultural Change in the Third Millennium BC in Carpathian Basin and Neighbouring Regions*. Budapest 2013, 203–232.
- Gimbutas 1965* – M. Gimbutas: *Bronze Age Cultures in Central and Eastern Europe*. Paris – Hague – London 1965.
- Hansen 2009* – S. Hansen: Kupferzeitliche Äxte zwischen dem 5. und 3. Jahrtausend in Südosteuropa. *Analele Banatului* S. N. 17, 2009, 139–158.
- Hozer/Machnik/Bajda-Wesołowska 2017* – M. Hozer/J. Machnik/A. Bajda-Wesołowska: Groby kultury ceramiki sznurowej i domniemane kultury mierzanowickiej w Szczytnej, pow. Jarosław – źródła, analiza, wnioski. In: P. Jarosz/J. Machnik (red.): *Nekropolie ludności kultury ceramiki sznurowej z III tysiąclecia przed Chr. w Szczytnej na Wysoczyźnie Kańczuckiej*. Via Archaeologica Resso-viensia 12. Rzeszów 2017, 7–130.
- Klochko 2001* – V. I. Klochko: *Weaponry of Societies of the Northern Pontic Culture Circle: 5000-700 BC*. Baltic-Pontic Studies 10. Poznań 2001.
- Klochko 2006* – V. I. Klochko: *Ozbroennia ta viiskova sprava davn’ogo naseleń’a Ukrainy*. Kyiv 2006.
- Klochko 2017a* – V. I. Klochko: Yamnaya Culture hoard of metal objects, Ivanivka, Lower Murafa. Autogenesis of ‘Dniester copper/bronze metallurgy’. *Baltic-Pontic Studies* 22, 2017, 226–245.
- Klochko 2017b* – V. I. Klochko: Ivonivskii skarb i problema ‘dnistrovskoi’ midi. *Magisterium. Arkheologichni studii Nacionalnogo Universitetu Kyevo-Mogylianska Akademia* 67, 2017, 25–36.
- Klochko 2019* – V. I. Klochko: Metalevi sokyry ran’ogo etapu iamnoi kultury Ukrainy. *Arkheologija i davnia istoriia Ukrainy* 2 (31), 2019, 69–77.
- Klochko/Klochko 2013* – V. I. Klochko/L. Klochko: Complex of Metal Goods between the Vistula and Dnieper rivers at the turn of the 4th/3rd to the 3rd millennium BC. Concept of the Carpathian-Volhynia ‘Willow Leaf’ Metallurgy Centre. In: A. Koško/V. Klochko (eds.): *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200–1750 BC*. Baltic-Pontic Studies 18. Poznań 2013, 39–71.

- Klochko/Kozymenko 2017 – V. I. Klochko/A. V. Kozymenko: *Drevnii metal Ukrainy*. Kiev 2017.
- Klochko et al. 2020 – V. I. Klochko/T. Y. Hoshko/A. V. Kozymenko/D. D. Klochko: *The Era of Early Metals in Ukraine*. Kyiv 2020.
- Korenevskii 1976 – S. N. Korenevskii: O metallicheskih toporakh Severnogo Prichernomia, Srednego I Nizhnego Povolzhia epokhi srednei bronzy. *Sovetskaia arkhologiiia* 4, 1976, 16–31.
- Mareş 2012 – I. Mareş: *Metalurgia aramei în civilizațiile Precucuteni și Cucuteni*. Suceava 2012.
- Markus/Okhrimenko 2010 – I. Markus/G. Okhrimenko: *Ozbroennia ta znariaddia pratsi naseleennia Zakhidnoi Volyni IV – II tys. do R. Kh*. Lutsk 2010.
- Roman/Dodd-Oprițescu/Janos 1992 – P. J. Roman/A. Dodd-Oprițescu/P. Janos: *Beiträge zur Problematik der Schnurverzierten Keramik Südosteuropas*. Mainz 1992.
- Telegin/Pustovalov/Kovalyukh 2003 – D. Y. Telegin/S. Z. Pustovalov/N. N. Kovalyukh: Relative and absolute chronology of Yamnaya and Katakomb monuments the issue of co-existence. In: A. Koško/V. Klochko (eds.): *The foundation of radiocarbon chronology of cultures between the Vistula and Dnieper: 4000–1000 BC*. Baltic-Pontic Studies 12. Poznań 2003, 132–184.
- Violity – Violity, online source: <https://auction.violity.com/auction/80-drevnee-i-antichnoe-oruzhie-i-orudiyatruda-do-500-g>.

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Kovové sekery typu Kozarac-Stublo z karpatsko-volynského metalurgického centra kultúr so šnúrovou keramikou na Ukrajine produkujúceho industriu v tvare vrbového listu a ich vzťahy s podunajským regiónom

Viktor Kločko

SÚHRN

Nové materiály získané v priebehu posledných rokov umožnili prehodnotiť naše názory na kovové sekery typu Kozarac-Stublo, vypracovať ich nové typologické členenie a predložiť novú teóriu o ich pôvode. Tento typ sekier patrí k typickým výrobkom karpatsko-volynského metalurgického centra kultúr šnúrovej keramiky na Ukrajine, ktoré produkovalo industriu v tvare vrbového listu (Klochko/Klochko 2013). Toto zistenie zároveň potvrdzuje koncepciu J. Bátoru (2006, 34–47).

Počiatky vývoja sekier typu Kozarac-Stublo môžeme sledovať v oblasti stredného Podnestria v priebehu neskorej etapy tripolskej kultúry. Neskôr sa tento typ sekier rozšíril prostredníctvom nositeľov kultúr so šnúrovou

keramikou do strednej Európy, kde ich ďalší vývoj prebiehal paralelne so západnými oblasťami Ukrajiny. Počas migrácií nositeľov tradícií kultúr so šnúrovou keramikou do oblastí východne od Dnepra sa sekery typu Kozarac-Stublo podieľali na formovaní nových typov sekier ako katakombovej kultúry, kultúry Babino a abaševskej kultúry, tak aj mladších typov sejma-turbinskej, zrubovej a andronovskej kultúry.

Kovové sekery kultúr so šnúrovou keramikou typu Kozarac-Stublo spolu so sekerkami jamovej kultúry typu Banijabik (Klochko 2019) sú ukazovateľmi migračných trás Indoeurópanov a ich presídlenia v strednej a východnej Európe.